

# KING COUNTY INTERNATIONAL AIRPORT STRATEGIC PLAN 2014-2020

**TECHNICAL APPENDICES** December, 2014





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## **APPENDIX A: GENERAL AVIATION DEMAND ANALYSIS**

This analysis is intended to provide King County with guidance in strategic planning for general aviation hangars and facilities on the airfield. Specific items addressed in the analysis include:

- Verification of existing based aircraft demand.
- Calculation of existing capacity and current demand placed on the current general aviation and fixed base operator (FBO) hangars by aircraft type based.
- Ability to handle additional demand (whether for basing, transient aircraft, or maintenance needs) in the existing hangars.
- Review of current trends and forecasts in general aviation and potential impact on the current capacity of general aviation facilities on the airfield.

The diversity of aircraft in the general aviation fleet at KCIA creates strategic planning challenges. Lease hold requirements vary from tie-down space to large corporate hangars. These facilities are located on either side of the two-runway system, with facility development having taken place over several decades.

Information for this analysis was collected by the consultant during initial inventories undertaken on King County International Airport - Boeing Field (KCIA) the week of July 11-15, 2011. Interviews were conducted with each of the FBOs: Galvin Flying Service, Clay Lacy, and Aeroflight. Subsequent information has been provided to the consultant by airport management. Several corporate hangar facilities are located on the airfield to serve the needs of local companies or individuals. The total square footage of large, medium, and small aircraft storage facilities has been estimated (based on aerial photography) at 741,000 square feet. This does not take into consideration Boeing Company facilities. All corporate flight departments are allowed to self fuel, and many have constructed fuel farms on their leaseholds. Other on-field tenants use the 200,000-gallon capacity fuel farm located on the north end of the airfield.

### **Background**

The FBOs and a majority of the individual hangars have been developed on the east side of the airfield to meet the needs of general aviation. The Boeing Company facilities dominate a significant land area on the west side of the airfield, although several corporate hangar facilities have been developed in recent years on the west side and south of midfield. The latest approved Airport Layout Plan has reserved areas

on each side of the airfield for redevelopment of corporate hangars, executive hangars, and small storage hangars to meet future demands.

The forecasts recently developed by the FAA project a modest increase in turbine (jet) aircraft through 2040, with the percentage of turbine aircraft increasing from 13 to 15 percent of the total based aircraft. Single engine and multi-engine aircraft are projected to decline slightly as a percentage of the based fleet mix. The FAA currently lists 58 turbine aircraft that are based on the airfield and projects this number to increase to 85 by 2040 (Terminal Area Forecast, January 2012). Total aircraft based on the airfield is currently estimated by the FAA at 443 and is projected to increase to 561 by 2040. As recently as 2008, the FAA reported 500 aircraft based on the airfield; therefore, the projections (at an annualized growth rate of 0.8 percent) are very modest and tend to fluctuate on a year to year basis.

## Existing Facilities

The existing corporate and FBO hangars provide an estimated 566,000 square feet of aircraft storage capacity, while the smaller storage hangars on the airfield provide an additional 175,000 square feet of hangar capacity. The newest 40,000 square-foot FBO hangar on the east side was constructed by Clay Lacy and is supported by a 15,000 square-foot office area. Galvin Flying Service has plans to redevelop their lease site with new hangars and office area within the next few years. Other recent redevelopment projects include a multi-hangar development which replaced the Quad 7 hangars on the east side and new corporate hangars on the west side of the airfield. These projects have resulted in an increase of 106,000 square feet of hangar storage on the airfield.

## Current Basing Demand vs. Hangar Capacity at KCIA

Table 2A summarizes the current storage area and basing demand in the corporate, FBO, and small row hangars. The footprint for each based aircraft is calculated by multiplying the wingspan by the length and adding a 20 percent factor for clearance around the aircraft. The following average footprints are used for each aircraft category: turbine (jet) – 4,000 square feet, multi-engine – 2,500 square feet, and single engine – 1,200 square feet.

**Table A-1: Basing Demand vs. Hangar Capacity Corporate/FBO/ Row (Small Aircraft) Hangars**

Hangars	Storage Area
Corporate/FBO- East Side	488,000 sq. ft.
Row Hangars – East Side	65,000 sq. ft.
Corporate – West Side	78,000 sq. ft.
Row Hangars – West Side	110,000 sq. ft.
<b>Total Storage Area:</b>	<b>741,000 sq. ft.</b>
Total Storage Demand:	656,000 sq. ft. (89% of capacity)

The FAA has reported 58 based aircraft in the turbine (jet) category, 109 aircraft in the multi-engine category, and 244 aircraft in the single engine category. The hangar demand calculation in the multi-engine and single engine categories has been reduced by 25 percent to account for the aircraft which normally tie down on the ramp. The 31 reported helicopters are also assumed to tie down on the ramp. The resulting calculation has provided an estimate for total hangar demand in the corporate/FBO row hangars of 656,000 square feet, or 89 percent of existing capacity.



The FBO and larger corporate hangars provide additional functions over the smaller corporate and row hangars, including aircraft maintenance and storage for transient (overnight) aircraft. Therefore, additional hangar demand may be created by FBOs with maintenance and/or transient aircraft requirements. However, many of the hangars on the airfield which are known to provide primarily maintenance functions have been excluded from the calculations. Furthermore, co-locating an aircraft service center in conjunction with an FBO facility may create further demand for larger corporate hangars. Summarizing the preceding analysis, current hangar capacity is very close to existing demand, and re-development activities that may be considered in the future should continue to attempt to maximize hangar capacity on lease parcels.

### **Operational Activity at KCIA in the Business Jet Category**

Over the 12-month period in calendar year 2011, the KCIA airport traffic control tower (accessed through the FAA's Enhanced Traffic Management Systems Counts) recorded 22,467 business jet operations. The mix of aircraft was diverse; however, the most common business jet operation was in the Lear 35/36 group, followed by the Cessna Excel, Citation X, Lear 31, and Bombardier Challenger series. It is not possible to obtain a complete listing of all business jet operations performed, since many local and transient jets block their identification using the Block Aircraft Registration Request (BARR) program.

A review of monthly data for calendar year 2011 indicates that peak activity in the business jet category is spread evenly throughout the year. The highest activity month was July, with 9.4 percent of the total annual operations. The FAA has estimated that there are 10 seats per departure (on average) in the business jet category.

### **General Aviation Trends**

Each year, the FAA publishes its national aviation forecast. The forecasts are prepared to meet budgeting and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition, FAA Aerospace Forecasts - Fiscal Years 2013-2033, has been utilized in the review of national trends in the general aviation industry, in addition the reports published by the General Aviation Manufacturers Association (GAMA), the Honeywell Corporation, JP Morgan Chase, and the Teal Group.

The passage of the General Aviation Revitalization Act of 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture) successfully infused new life into the general aviation industry after many years of decline. This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry.

In the seven years prior to the events of September 11, 2001, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. The economic climate and aviation industry had been recovering until early 2008, when it became clear that an economic downturn was underway. The economic downturn led to sharp declines in general aviation products and services. Aircraft manufacturing declined for the fourth straight year in 2011, while billings rebounded slightly after declining in 2009 and 2010. Preliminary figures released for 2012 indicate a modest increase from 2010 and 2011 deliveries.

To help revive the economy, lawmakers enacted the American Recovery and Reinvestment Act (ARRA) in February 2009. This bill included a combination of individual tax cuts, investment incentives, aid to people directly hurt by the recession, state fiscal relief, and direct government investment spending.

Following the enactment of this bill, the economy grew for the first time during the fourth quarter of FY 2009 (up 1.6 percent) and 2.2 percent for all of FY 2010.

Historically, aviation activity has closely followed the national economic outlook. The economic downturn has dampened the near-term prospects for the general aviation industry, but the long-term outlook remains favorable. Business aviation is expected to continue to show growth over the long-term.

Table A-2 presents historical data related to aircraft shipments and billings (by jet, turboprop, and piston categories).

**Table A-2: Annual General Aviation Airplane Shipments Manufactured  
Worldwide and Factory Net Billings**

Year	Total	SEP	MEP	TP	J	Net Billings (\$millions)
2000	3,147	1,877	103	415	752	12,984
2001	2,998	1,645	147	422	784	13,327
2002	2,677	1,591	130	280	676	11,295
2003	2,686	1,825	71	272	518	9,453
2004	2,961	1,99	52	319	591	11,226
2005	3,590	2,326	139	375	750	14,350
2006	4,053	2,513	242	412	886	17,958
2007	4,276	2,417	258	465	1,136	20,929
2008	3,970	1,943	176	538	1,313	23,821
2009	2,279	893	70	446	870	19,023
2010	2,020	781	108	368	763	19,290
2011	1,950	749	137	361	703	19,644
2012	2,133	790	91	580	672	18,873

SEP - Single Engine Piston; MEP - Multi-Engine Piston; TP - Turboprop; J - Turbofan/Turbojet

Source: General Aviation Manufacturers Association 2011 Statbook, Revised April 19, 2012, and updated February 12, 2013.

Many airports have seen an upward trend in activity by business jets. There are numerous factors that have led to this trend, including the growth of fractional aircraft ownership and a desire by frequent travelers to save time by avoiding security at commercial service terminals.

Table A-3 presents growth trends in fractional aircraft ownership. As with most sectors of general aviation, recent years have seen a decline in the number of fractional shares and aircraft in operation. At the same time, the table supports the concept of fractional ownership, its popularity, and the likelihood that it will continue to grow as the economy improves.

**Table A-3: Fractional Shares and Number of Aircraft in Use**

Year	Number of Shares	Number of Aircraft
1994	158	NA
1995	285	NA
1996	548	NA
1997	957	NA
1998	1,551	NA
1999	2,607	NA
2000	2,810	574
2001	3,601	689
2002	4,244	780
2003	4,516	826
2004	4,765	870
2005	4,828	945
2006	4,863	984
2007	5,168	1,030
2008	5,179	1,094
2009	4,881	1,037
2010	4,862	1,027
2011	4,677	920
2012	4,350	905

Source: GAMA/JETNET LLC

## Market Outlook

In October 2011, Honeywell published its 20th edition of the Business Aviation Outlook. In the report, it was noted that business jet shipments for 2011 are expected to be just 600-650, down 15 percent from 732 in 2010. The report indicates that deliveries are expected to climb again with modest growth in 2012. Current development programs will boost the outlook for 2012 and beyond, with up to 10,000 new aircraft deliveries worth \$230 billion by 2021.

Having surveyed more than 1,500 flight departments around the world for its annual business aviation outlook, Honeywell has projected international demand to account for 45 percent of new aircraft purchases over the next five years. Chief among the reasons to replace current aircraft (other than age and cabin size) is aircraft range demands—reflecting the sea change in composition of overall business jet demand from a U.S. centric to a global business.

JP Morgan Chase also believes that orders should turn up in 2012, with demand strong for large cabin business jets. The weak economic recovery should leave little room to fall if there is another macro shock, at least at the low end, though a China hard landing could spell risk for large cabin demand. Over the past two summers, the pre-owned business jet inventory bottomed in mid-summer before rising in the following months. The recent \$9.6 billion order by NetJets is considered a bright spot for the

industry, although fractional operator orders are generally considered to be “less firm” in the industry. However, it is still a very positive development for Cessna and Bombardier.

The industry’s backlog continues to erode as deliveries outpace new orders, especially in the small cabin market. However, new net orders are up at most aircraft manufacturers, while cancellations have abated. Manufacturers of large cabin business jets – Gulfstream, Bombardier, Dassault Aviation, and Embraer – have a more internationally diverse group of customers, and a much healthier backlog of orders.

The Teal Group, analysts for the aerospace and defense industry, have projected a potential demand for 10,249 new business jets over the next 10 years, worth \$249.5 billion. The strongest market is expected in large cabin, ultra long haul aircraft.

## **FAA Economic Outlook**

The FAA forecast uses economic forecasts developed by IHS Global Insight, Inc. to project domestic aviation demand. Data suggests that unemployment hit its highpoint in the first quarter of FY 2010. The recovery is expected to be modest by historical standards, and the economy is expected to be plagued by continued levels of high private and public debt, a weak housing market, and tight credit. How these issues are resolved will determine the future path of recovery. However, prior fears of a double-dip recession are unlikely to be realized.

Consumer spending is by far the largest component of the U.S. economy. Burdened by high household debt and rising unemployment, consumer spending increased only 2.0 percent in 2011. The recovery in consumer spending is projected to continue, with increases of 1.9 percent in 2012 and 1.8 percent in 2013, as households continue their struggle to reduce debt burdens and rebuild retirement assets.

After 2013, U.S. economic growth is projected to average 3.1 percent per year, with rates ranging from 2.1 to 3.5 percent. Oil prices are projected to increase to \$115 per barrel by 2020, then gradually increase to \$138 per barrel by 2032.

## **FAA General Aviation Forecasts**

The FAA forecasts of general aviation activity assume that business use of general aviation aircraft will continue to expand at a more rapid pace than that for personal/sport use. Corporate use of fractional and charter aircraft continues to be a practical alternative to commercial travel due to time savings and convenience.

The active general aviation fleet is projected to increase at an average annual rate of 0.5 percent through 2033, growing from 220,670 in 2012 to 246,375 in 2033. Exhibit 2A presents the FAA forecast for U.S. active general aviation aircraft.

Piston-powered aircraft are projected to decrease from the 2010 total of 159,007 through 2028 with declines in both single engine and multi-engine fixed wing aircraft. Beyond 2028, active piston-powered aircraft are forecast to increase to 148,660 in 2033, still below the current number in the fleet.

The use of business jets has led the growth in the general aviation industry. In 2000, there were just over 7,000 business jets in the fleet. In 2012, it is estimated that there were 11,890 business jets for an annual growth rate of 4.5 percent. As shown previously, fractional ownership programs became very popular during this period. Corporate safety/security concerns combined with increasing flight delays at some U.S. airports have made these programs practical alternatives to commercial travel. In addition, new product offerings, the addition of very light jets, and increasing foreign demand has also contributed to this growth. By 2033, the FAA forecasts there will be 24,620 business jets in the fleet. This represents an annual growth rate of 3.5 percent from 2012 through 2033.



Overall, the FAA is forecasting that the next few years will be ones of slow or stagnant growth, reflecting the uncertainty surrounding the economic outlook. Ultimately, the FAA is forecasting a return to a consistent growth pattern for general aviation aircraft.

**Exhibit A-1: U.S. Active General Aviation Forecasts**

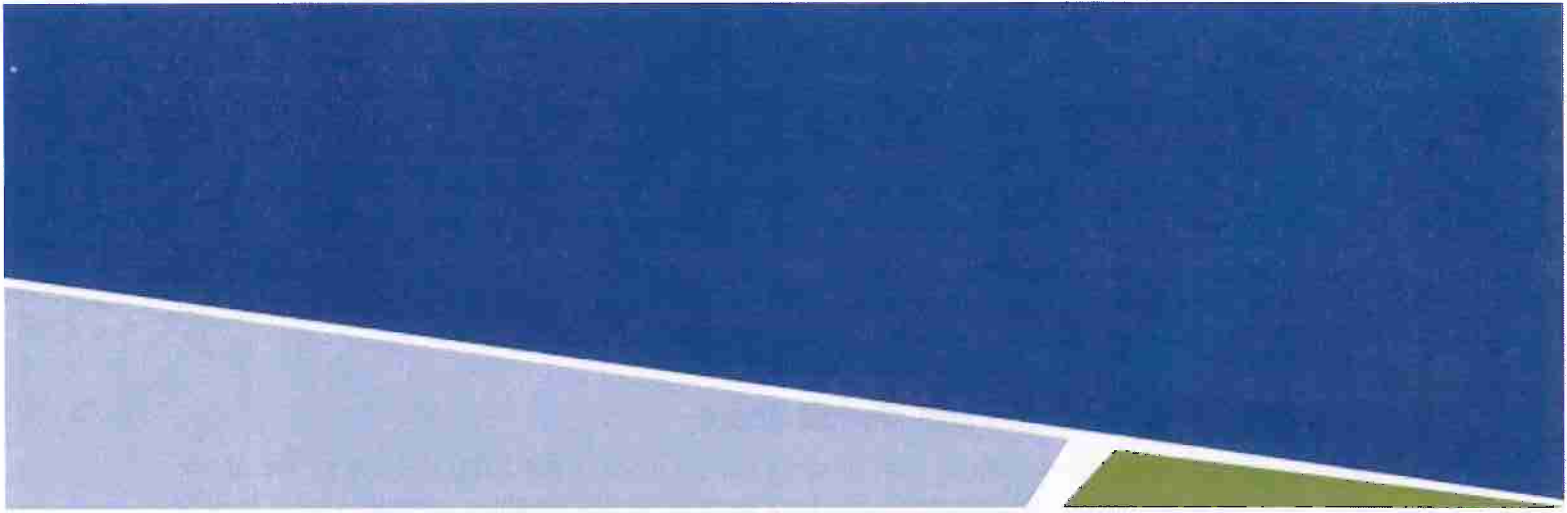


## Implications on Demand for KCIA General Aviation Facilities

Anticipated growth in use of general aviation aircraft and the number of turbine aircraft basing at KCIA will create demand for additional storage hangars (or redeveloped facilities) and service facilities. However, with current facilities operating at an estimated 89 percent of capacity, and modest delivery schedules anticipated for new aircraft in the next few years, the added demand on the airfield is not anticipated until the economy has fully recovered from the current recession.

Continued use and development of small general aviation hangars has been recommended on both the east and west sides of the airfield in the adopted Airport Master Plan. Because of building height restrictions, both the north and south ends of the development area on the east side of the runway system are best utilized for small general aviation facilities.

The next update to the Airport Layout Plan for KCIA should take into consideration the mix of hangar types which will be needed over the next 20-30 years to handle the current mix of aircraft being produced by the manufacturers. The operational impact of future corporate aircraft on the airfield capacity should be minimal, since the airfield is operating at approximately 50 percent of its current annual service volume, total operational demand by corporate aircraft is only 10 percent of total airfield demand, and the FAA has projected total operational levels to not reach 300,000 before 2040.



## APPENDIX B: AIR CARGO DEMAND ANALYSIS

The local air cargo market is generated when there is a need for transportation of material or goods between two points in an expeditious manner. Products that benefit from expedited transport may include: aerospace and automotive parts, computers, and perishable goods. All of these are considered high value, light weight, and time critical. The air cargo industry operates via five distribution channels:

1. All-cargo carriers
2. Integrated express operators
3. Commercial airlines
4. Freight forwarders
5. Ad-hoc carriers

The differences in these respective categories have diminished over time through industry consolidation and changing business plans.

**All-cargo carriers** operate airport-to-airport air cargo and freight services for their customers and offer scheduled service to major markets throughout the world using wide body and/or containerized cargo aircraft. The scheduled all-cargo carriers located at King County International Airport/Boeing Field (KCIA) operate feeder aircraft for integrated carriers (e.g., Ameriflight or Martinaire) or small package services requiring expedited shipment (e.g., Airpac Airlines).

**Integrated express carriers** move the customer's goods door-to-door, providing shipment collection, transport via air or truck, and delivery. At KCIA, UPS is the best example of this type of carrier. Additionally, they provide next day and deferred, time-definite delivery of documents and packages. Integrated express carriers operate using hub and spoke systems (similar to passenger air carriers).

Air cargo services provided by **commercial airlines** vary in scope and size from airline to airline. The size of their fleet aircraft will dictate their ability to handle bulky cargo. Since only 9-passenger aircraft are used at KCIA in scheduled service, the local capability is limited. At Seattle-Tacoma International Airport (Sea-Tac), where the commercial airline fleet includes wide-body aircraft, the aircraft's lower deck will handle containerized cargo. However, the transition to regional jets on many domestic routes has limited the air cargo capacity on many commercial airlines. Recent security rules have also impacted the ability of scheduled commercial airlines to handle air cargo on domestic routes.

**A freight forwarder** accepts small packages from shippers and consolidates them into container loads. These loads are then transferred to the non-integrated carrier to deliver to an agent or subsidiary at

another airport. DB Schenker/BAX Global is a good example of a multi-modal freight forwarder located at KCIA, operating its own aircraft through a hub and spoke system until late 2011, when the company closed its Toledo hub, grounded its aircraft, and transitioned to a trucking operation.

**Ad-hoc carriers** are unscheduled charter flights carrying freight or mail. There are several of these companies at KCIA using a mix of propeller-driven aircraft and jets: Nolinor Aviation, AirNet Systems, and Northern Air Cargo.

## KCIA Air Cargo Demand and Market Share

Sea-Tac controlled 70 percent of the local air cargo market in 2010 and 2011, realizing all five of the preceding air cargo distribution channels. Sea-Tac's all-cargo landed weight in calendar year (CY) 2010 was 1,394,058,765 pounds, a decline of 13.23 percent from the previous year. Their rank among U.S. airports dropped from 16th to 18th place. KCIA has ranked in the top 40 U.S. airports in the past decade, as evidenced in Table B-1, and stood in 29th place in 2012. Total number of aircraft landings through the period has declined, although the average landed weight per aircraft has increased from 69,469 to 119,114 pounds through the period. Other airports in the Puget Sound region do not rank in the top 125 air cargo airports in the U.S. and are limited to non-scheduled operations.

An airport's landed weight (and U.S. market share) is important from the standard of funding set-asides used by the Federal Aviation Administration for funding appropriations to qualifying airports handling air cargo. The annual appropriation to the 109 U.S. airports in FY 2011 with a minimum of 100,000,000 pounds landed weight was \$118 million. KCIA's air cargo entitlement in FY 2011 was \$836,981.

**Table B-1: Historical Air Cargo Aircraft Gross Landed Weights and Landings Years 2000-2012**

CY	KCIA Landed Weight	Landings	U.S. Airports Landed Weight	Rank
2000	856,064,310	12,323	149,506,866,119	41
2001	725,072,970	10,075	142,881,033,119	44
2002	781,775,040	10,721	146,580,733,210	37
2003	763,813,680	10,945	146,144,195,233	35
2004	892,135,450	12,081	148,594,256,779	32
2005	866,798,960	12,695	152,181,826,189	34
2006	784,084,940	784,084,940	152,413,664,740	38
2007	805,503,706	9,726	153,166,274,672	34
2008	835,114,481	8,853	142,561,943,933	32
2009	894,664,512	8,407	126,382,255,756	29
2010	906,716,494	8,460	135,060,724,769	25
2011	909,809,432	7,666	134,387,117,916	24
2012	791,928,576	7,344	132,711,498,946	29

Source: FAA DOT/TSC ACAIS Database (years 2000-2012) and KCIA Landing Reports.

\*Qualifying Airports (>100,000,000 lbs. landed weight)



Enplaned and deplaned air cargo is reported by each air cargo carrier operating at KCIA. The totals for the period 2005-2011 have been summarized in Table B-2. In 2011, 60 percent of the total air cargo handled through the airport was deplaned (inbound), while 40 percent was enplaned (outbound). UPS handled 68.5 percent of the air cargo in 2011, with 7.3 percent of the total weight reported as international cargo or parcels. The other carriers do not report their international /domestic compilation.

**Table B-2: Enplaned and Deplaned Air Cargo in Metric Tons, Years 2005-2011 (KCIA)**

	2005	2006	2007	2008	2009	2010	2011
<b>Enplaned</b>	39,564	37,635	43,104	40,768	35,323	38,774	45,932
<b>Deplaned</b>	73,193	73,555	79,494	78,229	72,045	78,706	69,415
<b>Total</b>	112,758	111,190	122,597	118,997	107,370	107,370	115,347

Source: KCIA Air Cargo Records. Numbers rounded to nearest metric ton.

## Air Cargo Carrier Interviews

In July 2011, interviews were conducted with several of the air cargo operators on the airfield in conjunction with the on-going strategic planning exercise: UPS/Ameriflight, ATSG/ABX/DHL, and DB Schenker Logistics/BAX Global. The interviews provided some insight into each company's respective plans in the Seattle market.

UPS has distribution centers in Redmond and Seattle; therefore, KCIA offers locational advantages over Sea-Tac. However, Sea-Tac has Category III instrument approaches, offering better landing capabilities in low visibility conditions. UPS indicated they would be moving a 757 to Spokane in early 2012, while maintaining service to/from KCIA with MD11 and 767 aircraft. Some of the existing Ameriflight aircraft (which feed the UPS operation) will relocate to Spokane in conjunction with the reassignment of aircraft in 2012. A separate interview with Ameriflight confirmed that a portion of their 13-aircraft fleet (4 or 5 aircraft) will relocate to Spokane, and that maintenance will be split between the two locations.

Immediately following the interview with DB Schenker Logistics (parent company of BAX Global), it was announced that the Toledo hub (supporting domestic air operations) would close and the company would cease all operations by their DC-8-71F/73F fleet of aircraft and transition to truck operations. By October 2011, these aircraft had ceased all operations to/from KCIA.

Air Transport Services Group (ATSG), the parent company of ABX Air (formerly Airborne Express) has had an agreement with DHL to provide airlift for the U.S. portion of DHL's international network. They have operated a fleet of 767-200 aircraft to/from KCIA for DHL. DHL indicated in their interview that Sea-Tac offers no advantages over KCIA for their operation. Their location at KCIA offers them a gateway to the Northwest and Canada, while international destinations will vary through the year. Beginning March 26, 2012, Capital Cargo International Airlines (CCIA) replaced ATSG on behalf of DHL, flying two weekday flights through KCIA using 757-200F aircraft. They are routing aircraft between KCIA and Los Angeles, via Portland.

## Frequency, Destination, and Stage Lengths of KCIA Air Cargo Flights

In CY 2011, All-Cargo Data Landing Reports obtained from the KCIA Airport Offices indicated a total of 7,666 landings (15,332 total operations). Forty percent of the operations were performed by jets, and 60 percent were performed by propeller aircraft. Ninety-four (94) percent of the total landed weight was recorded by jet freighters, while 52 percent of the total landed weight was recorded by UPS. Within the jet freighter category, 68 percent of the fleet were wide-body aircraft.

For CY 2011, the frequency of jet departures by destination has been summarized in Table B-3. The jet departures were performed by the three largest air cargo companies operating to/from KCIA: UPS, ABX/DHL, and DB Schenker/BAX Global. Total air cargo lift capacity on these aircraft was estimated at 167,000 tons, which would indicate that approximately 40 percent of capacity was being used for inbound freight, while 28 percent of capacity was used on outbound freight.

**Table B-3: Jet Departures, Year 2011 (KCIA)**

Non-Stop Destination	Total Jet Departures	Distance (nm)
Louisville, KY	481	1940
Vancouver, BC	467	121
Portland, OR	396	135
San Francisco, CA	241	685
Cincinnati, OH	235	1959
Rockford, IL	213	1653
Ontario, CA	208	963
Spokane, WA	191	222
Anchorage, AK	116	1440
Minneapolis, MN	113	1394

Source: ETMSC (FAA) and Market Share Reports, CY 2011.

Note: Only destinations with greater than one weekly jet departure have been included in table.

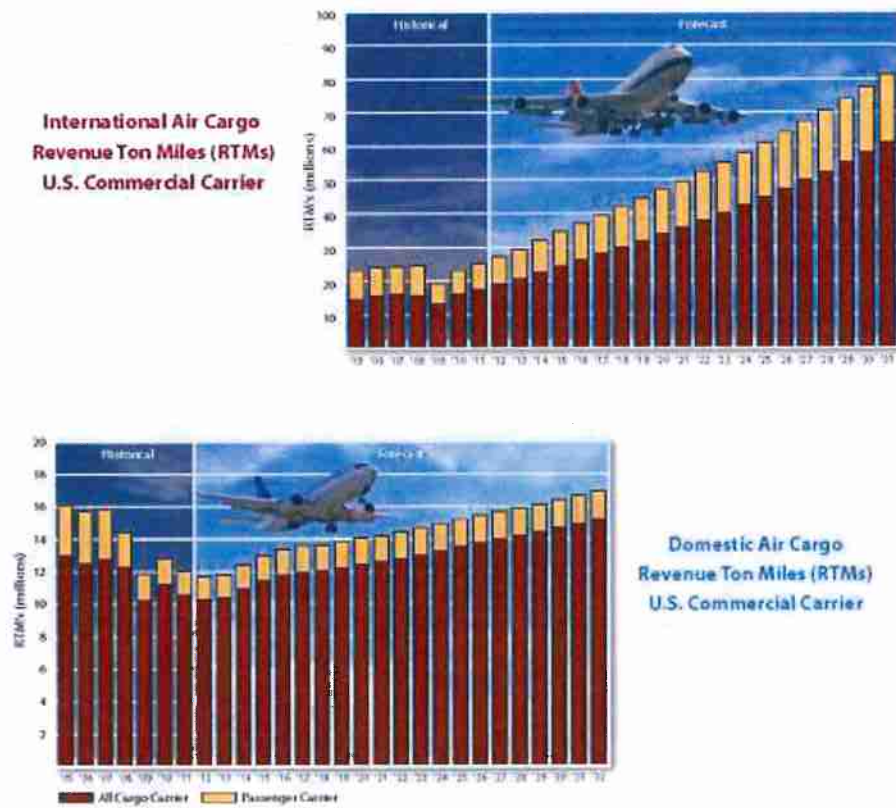
The operations and destination data was recorded by the FAA and reported through the *Enhanced Traffic Management System Count (ETMSC)* and *Market Share Reports* derived from the individual flight plan reporting. Several air cargo companies at KCIA (two of the larger operations are Ameriflight and Airpac) operate only propeller aircraft to regional destinations, with the highest frequencies to Portland, Spokane, Vancouver, Moses Lake, and Yakima. Jet departures to destinations with less than one weekly flight have not been listed in Table B-3.

Non-stop distance in nautical miles has been calculated and provided in the table. The mix of jets providing service to these destinations include: 757-200F, 767-200, DC8-71F/71F, A300-600, and MD11 aircraft, although operations by the DC8-71F/73F for DB Schenker/BAX Global ceased in October 2011 and cargo lift for DHL will be handled by CCIA with 757-200F aircraft (in lieu of the 767-200) beginning March 26, 2012.



## National and International Trends

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large commercial carriers, regional/commuter carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this analysis was prepared was *FAA Aerospace Forecasts-Fiscal Years 2012-2032* (see exhibit below), published in March 2012. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.



During 2009, world industrial production fell 9.0 percent, producing the worst decline in freight transport in 80 years. Historically, air cargo activity tracks with gross domestic product (GDP). Additional factors that affect air cargo growth are fuel price volatility, movement of real yields, and globalization. Significant structural changes have occurred in the air cargo industry. Among these are air cargo security regulations by the FAA and TSA, maturation of the domestic express market, a shift from air to other modes (especially truck), use of all-cargo carriers (e.g., FedEx) by the U.S. Postal Service to transport mail, and the increased use of mail substitutes (e.g., e-mail, faxes, etc.).

The FAA is projecting that air cargo growth will continue to be tied to economic growth. Also, security restrictions on air cargo transportation will remain in place. They also anticipate that most of the shift from air to ground transport has already occurred.

Air cargo traffic contains both domestic and international freight/express and mail. Cargo moves in the bellies of passenger aircraft and in dedicated all-cargo aircraft on both scheduled and non-scheduled service. Cargo carriers face price competition from alternative shipping modes such as trucks, container ships, and rail cars.

U.S. carriers flew 37.3 billion revenue ton miles (RTMs) in 2011, up 3.7 percent from 2010. Domestic RTMs fell by 6.1 percent to 12.0 billion. However, international RTMs increased by 9.1 percent to 25.2 billion, more than offsetting the decline in domestic RTMs. The FAA has projected that total RTMs will grow at an annual rate of 4.9 percent through 2032, while the domestic segment will grow at 1.8 percent and the international segment will grow at an annual rate of 5.7 percent.

Air cargo RTMs flown by all-cargo carriers were 75.1 percent of the total RTMs in 2011, with passenger carriers flying the rest, or 24.9 percent. Total RTMs flown by the all-cargo carriers increased 3.0 percent in



2011 from 27.2 billion to 28.0 billion. Total RTMs by the passenger carriers were 9.3 billion in 2011, 5.9 percent higher than in 2010. The all-cargo carriers have increased their share of domestic cargo RTMs from 70.0 percent in 2000 to 87.6 percent in 2011. This is because of the shrinkage of the domestic/express business for passenger carriers as they have responded to the substantial shocks to the aviation system during this time. Shrinking networks, elimination of unprofitable flying, and consolidation have reduced opportunities for growth in their freight/express business. The all-cargo share is forecast to grow to 89.7 percent by 2032 based on increases in capacity for all-cargo carriers and security considerations.

On August 3, 2007, *Recommendations of the 9/11 Commission Act of 2007* was signed into law. Section 1602 of this Act states that air cargo placed on passenger aircraft will receive the same level of screening as passenger-checked baggage. The legislation went into effect on August 1, 2010, and requires 100 percent inspection of cargo transported on passenger aircraft at the piece level.

The legislation did not apply to cargo on U.S. bound passenger flights from overseas or on cargo-only aircraft. However, following the discovery of a bomb on an all-cargo plane bound for the U.S., the Air Cargo Security Act was introduced on November 16, 2010. The purpose of the Act is to expand the 100 percent cargo screening mandate of passenger aircraft to cargo-only aircraft. The bill didn't become a law, and TSA is currently negotiating screening agreements with 20 countries where approximately 80 percent of U.S. bound international cargo originates.

International air cargo traffic is divided by the FAA into four regions: Atlantic, Latin, Pacific, and Other. The Pacific region experienced 9.1 percent growth in 2011—more than the Atlantic or Latin regions.

The Boeing Company recently prepared their biennial assessment of the world air cargo market for World Air Cargo Forecast 2010-2011, analyzing the worldwide market for freighters over the next 20 years. The freighter fleet is projected by Boeing to grow by two-thirds over the next 20 years, in response to annualized air cargo growth of 5.6 percent. Growing world trade, increasing demand for transport of perishable and time-sensitive commodities, and the need to replace aging airplanes are expected to contribute to the demand for new freighters.

The largest segment of freighter growth is anticipated in the standard-body market, with many of these aircraft converted from passenger to cargo use. These conversions represent low capital costs and make them attractive for standard-body freight operations. Purpose-driven freighters in the medium wide-body market are required by express carriers with time-sensitive cargo. The lower trip costs of medium wide-body (as opposed to large freighters) offer greater flexibility in the scheduling and frequency of shipments. The large freighter market demand will be met with a combination of new aircraft and conversions. However, Boeing anticipates that the performance and reliability advantages of new, purpose-driven freighters are significant for intercontinental cargo operations, where larger, heavier payloads and range are crucial.

As with any forecast, The Boeing Company anticipates that economic activity remains the primary driver of air cargo traffic growth. High unemployment and restrained consumer spending will impact the world's GDP. Asia's air cargo markets will continue to lead the industry—both intra-Asia and markets connecting developing economies with developed economies. This growth in international trade lanes is anticipated to lead the growth in large freighter demand.

## Regional Trends

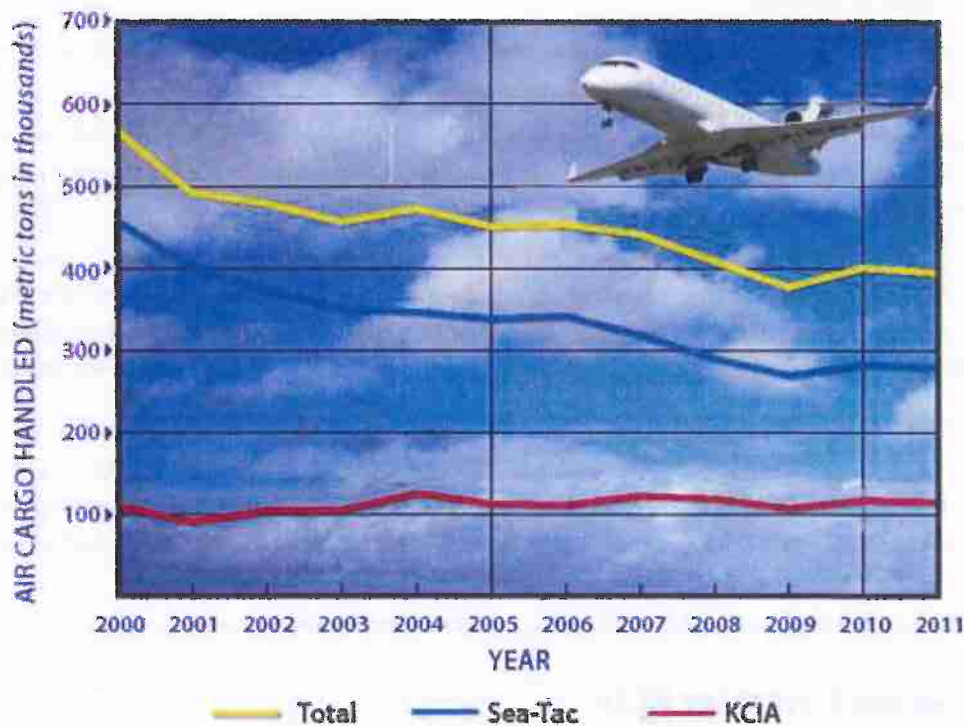
The Central Puget Sound region is comprised of King, Kitsap, Pierce, and Snohomish Counties, and the region's major aviation facilities include Sea-Tac, Boeing Field, and Paine Field. The region's population increased by 12.7 percent in the past decade, with a total population of 3.7 million in the four-county area. The Puget Sound Regional Council (PSRC) has identified five industry clusters in the region:

aerospace, information technology, life sciences, logistics and international trade, environment and alternative energy, with the combination of these contributing to strong economic growth.

According to the Regional Air Cargo Strategy Report prepared by the PSRC in October 2006, Asia accounts for nearly 80 percent of the region's total trade (in dollar value), with approximately 45 percent handled by air. Of the other major international air cargo markets, Europe accounts for approximately 40 percent, with other continents contributing the remaining 15 percent.

Sea-Tac and KCIA are handling both domestic and international air cargo demand—with KCIA's cargo carriers routing most of their international cargo through west coast hubs or Anchorage. Total air cargo tonnage through KCIA was projected to increase twofold by 2025 in the PSRC study, with KCIA maintaining roughly the same market share (25 percent). Total air cargo operations were projected to increase from 23,000 in 2004 to 34,000 by 2025. However, in 2011, total air cargo operations had declined to 15,332, while total air cargo tonnage handled through KCIA was relatively unchanged.





It was noted in the Regional Air Cargo Strategy Report that business decisions by individual carriers has led to a transfer of air cargo demand between Sea-Tac and KCIA. UPS initiated their operations at KCIA in 1996, FedEx relocated from KCIA to Sea-Tac in 1997, and DHL relocated from Sea-Tac to KCIA in 2004. KCIA's proximity to Seattle's Central Business District has made it a desirable location for ground (trucking) components throughout the region, and efforts by the airport management to accommodate air cargo despite tight geographic constraints have been beneficial to both the tenant and the airport operator. Paine Field has not been considered a viable option by the cargo companies in the past because of distance and traffic.

The total air cargo handled by KCIA and Sea-Tac since 2000 has been summarized on the graph above. While the total cargo handled at KCIA has increased slightly over the period, Sea-Tac has experienced a net decline of nearly 40 percent. Total cargo for the two airports combined has declined by 30 percent over the period.

The forecast assumptions which were applied to KCIA in the PSRC study include:

- Forecast growth in the central Puget Sound region and the broader U.S. economy is expected to provide a solid base for incremental growth in air cargo at KCIA. Predominate domestic operations at the airport will be influenced by U.S. economic (rather than global) activity.
- UPS, as the largest cargo carrier, is expected to remain and expand its operation at KCIA.
- Other "large" air cargo carriers at KCIA are also expected to grow over the forecast period.
- KCIA is a relatively constrained airport and the cargo carriers are expected to up-gauge the size of their aircraft over the forecast period. In 2004, wide-body freighters already made up 53 percent of the "large" fleet mix (from 35 percent in 2000) and the transition was expected to restrain the increase in air cargo operations by the "large" carriers.



- Small feeder carriers are expected to continue to play an important role in transporting air cargo to remote areas of the state.

In 2012, seven full years since the analysis was undertaken for the PSRC study, the following trends have been noted for KCIA:

- Through one of the worst economic periods in U.S. history, the worst decline in freight transport in 80 years, and significant changes in the air cargo industry, KCIA posted their highest air cargo landed weights in the past decade. However, total air cargo operations in 2011 were only 15,332, 36 percent below the level reported in 2004.
- UPS remains the largest of the “large” air cargo carriers, although an increasing amount of their express business has transitioned to their trucking operation. A new distribution hub is being established in Spokane in 2012, which will impact total landed weight and operations at KCIA.
- Wide-body freighters made up 68 percent of the “large” fleet mix at KCIA in 2011.
- Other “large” carriers reported strong numbers through most of 2011; however, DB Schenker/BAX Global has closed their air hub in Toledo and DHL has recently downsized contracted aircraft (now operated by CCIA) using KCIA. Total lift capacity is expected to decline by an estimated 50,000 tons in 2012.
- The small feeder carriers continue to play an important role in transporting air cargo.

## The Projected Market for KCIA

The local economy is expected to continue to provide a solid base for incremental air cargo growth; however, recent reductions in lift capacity at KCIA by two of the larger air cargo companies will negatively impact lift capacity in the near term. This is not expected to have any impact on total inbound and outbound air cargo tonnages handled through the airport which are expected to closely track with the domestic air cargo growth projected by the FAA at 1.8 percent annually through 2032.

Assuming a two percent annual growth rate over the next 20 years, annual tonnages are projected to increase by roughly 50 percent to 175,000 metric tons. Growth in air cargo operations will be closely tied to available lift capacity, route structures, and non-stop destinations.

Based upon current lift, inbound/outbound tonnages, and average landed weights, operations will be projected to increase by only one percent per year, to approximately 18,900 annual operations by 2032, an operational demand experienced on KCIA as recently as 2006. Two-thirds of the available lift in the “large” category is expected to be provided with wide-body aircraft. The baseline forecasts have been summarized in the following graphs.

It is important to note that the baseline outlook assumes the current distribution of major air cargo operations within the Seattle market place. As a result, the forecast implies steady growth that will roughly track with regional economic growth, which is a reasonable basis for long-term financial planning. However, this understates the potential volatility in the segment and the strategic importance of air cargo to KCIA.

The biggest market driver for air cargo will not be the underlying demand for cargo lift capacity, but the location of the major providers of that lift capacity. As a result, the Strategic Plan must address the challenges and opportunities associated with retention of current air cargo operators and potential to attract new carriers to Boeing Field,



### Projected Air Cargo Tonnage - KCIA



### Projected Air Cargo Operations - KCIA



Sources: PSCOG, ACI-NA and Airport Records, and Coffman Associates Analysis.



## **APPENDIX C: PASSENGER DEMAND ANALYSIS**

The local passenger market is defined by national and regional trends and influenced by federal aviation regulations. While Sea-Tac handles 99 percent of the scheduled passenger traffic in the area, King County International Airport - Boeing Field (KCIA) has provided niche passenger services to the local population over the past decade. The local niche carriers are able to operate on thin routes to destinations which are either not served or underserved by the other regional or national air carriers. The primary carrier at KCIA, Kenmore Air Express, has been providing daily services on 9-seat passenger aircraft to the San Juan Islands and Port Angeles, while SeaPort Air has (until terminating service on January 27, 2012) provided daily services with 9-seat passenger aircraft to Portland.

The following analysis will examine national trends, overview the market and services from KCIA, and discuss potential passenger demand at KCIA and its implications on strategic planning.

### **National Trends**

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition is FAA Aerospace Forecasts-Fiscal Years 2012-2032, published in March 2012. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

Over the past decade, the commercial air carrier industry has suffered several major shocks that have led to reduced demand for air travel. These shocks include the terror attacks of September 11, 2001, rising fuel prices, and the most significant global economic recession since the Great Depression. Airline business plans changed significantly to address the volatility in the industry. Carriers began charging separately for services historically bundled in the price of a ticket such as checked luggage fees and food fees. To lower operating costs, carriers eliminated unprofitable routes and grounded older, less fuel efficient aircraft. By 2010, the industry returned to profitability for the first time since 2007.

As the economy continues its slow recovery from the recession, the FAA is forecasting moderate growth over the next five years, with a return to historic levels of growth being attainable in the long term.

The passenger airlines in the United States are comprised of 16 mainline carriers that use large passenger jets (over 90 seats) and 68 regional carriers utilizing smaller piston, turboprop, and regional jets (up to 90 seats). Three distinct trends are emerging in today's commercial air carrier industry:

- Convergence of the network and low cost carrier business models and unit costs;
- Continuing industry consolidation and restructuring, and;
- The proliferation of ancillary revenues (e.g., baggage fees).

A sign that the low cost carriers and network carriers are converging is the narrowing share of capacity flown between these two groups and the fares they charge. Low cost carrier capacity has been on the rise. Since 2000, the share of capacity flown by the low cost carriers has almost doubled, going from 17 percent in 2000 to 32 percent in 2011. Airfares have also been converging as low cost carriers and network carriers are lowering fares.

The industry continues to consolidate. Legacy carriers Northwest and Delta merged in 2010. Frontier Airlines completed its acquisition of Midwest Airlines. Also announced in 2010 was the merger of Continental and United Airlines, Southwest and Air Tran, and SkyWest's acquisition of ExpressJet. As a result, overall capacity (measured in seats flown) is down 7.0 percent when compared to 2001.

The reduction in overall capacity has been primarily the result of mainline carrier (both low-cost and network carriers) capacity reduction. In 2011, mainline carriers provided 16 percent less capacity than it did in 2001 (and carried 12 percent fewer passengers). Conversely, capacity provided by regional carriers has increased 153 percent, with a 113 percent increase in passengers, since 2001.

The shift in capacity to regional carriers can be attributed to:

- Fleet transformation from piston and turboprops to regional jets by the regional carriers;
- A reduction in overall travel demand, and;
- Mainline carriers shifting some routes to regional carriers.

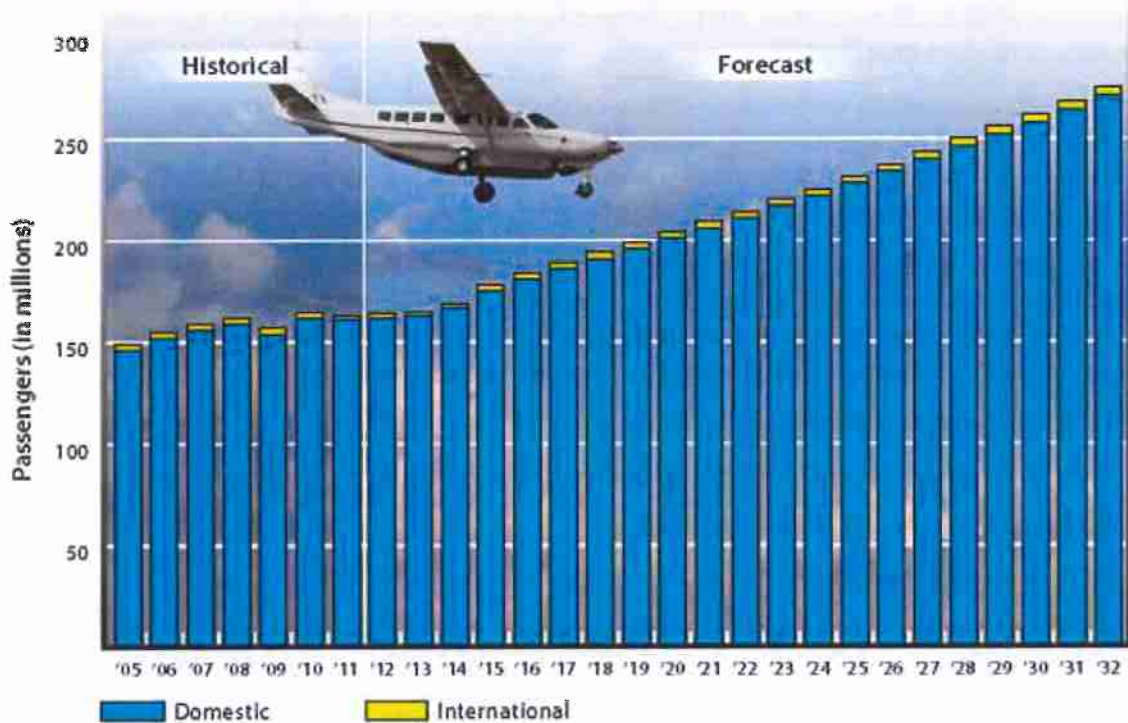
Over the past few years, however, this trend has slowed down considerably. In 2011, mainline carrier passenger growth was up 3.4 percent over 2010, while regional carriers declined by 0.4 percent.

The FAA provides several measures for commercial airline forecasts. After experiencing growth in 2011, domestic system capacity is projected to decrease slightly in 2012 by 0.8 percent. Similarly, mainline carrier capacity is forecast to decrease when compared to 2011 (down 0.3 percent). Regional carriers are forecast to decrease 0.5 percent in 2012, following modest growth of 0.6 percent in 2011. For the entire forecast period, domestic capacity is projected to increase at an average annual rate of 2.5 percent, with mainline carriers growing slower (2.4 percent per year) than the regional carriers (3.3 percent annually).

Enplanements are forecast to slightly decline (down 0.1 percent) in 2012 following a 2.3 percent increase in 2011. Over the forecast period, domestic enplanements are projected to grow at an average annual rate of 2.3 percent with mainline carriers growing more slowly than regional carriers (2.2 versus 2.5 percent a year, respectively).

The number of commercial aircraft is forecast to grow from 7,185 in 2011 to 9,853 in 2032 for an average annual growth rate of 1.5 percent. Following trends in recent years, a total of 96 aircraft are projected to be removed from the fleet in 2012, after shrinking by 29 in 2011, as the slow economic recovery and high fuel prices have prompted carriers to trim their fleets.

### U.S. Regional / Commuter Scheduled Passenger Enplanements



Source: FAA Aerospace Forecasts, Fiscal Years 2012-2032



## State and Regional Trends

The Washington State Aviation System Plan (WSASP) was completed in 2009 as part of the Long-Term Air Transportation Study. The plan included a system-wide airport inventory and 25-year forecast. Passenger traffic was projected to remain highly concentrated at Sea-Tac and Spokane airports, with Sea-Tac accounting for 85 percent of state-wide enplanements. Using a 2005 base year, the WSASP projected a 2.5 percent annualized growth rate for the State of Washington boardings total, a 2.4 percent annualized growth rate for Sea-Tac boardings, and a 2.1 percent annualized growth for boardings at KCIA through the year 2030, as summarized in Table C-1.

**Table C-1: Washington State, Sea-Tac, and KCIA  
Enplaned Passenger Forecasts, 2005-2030**

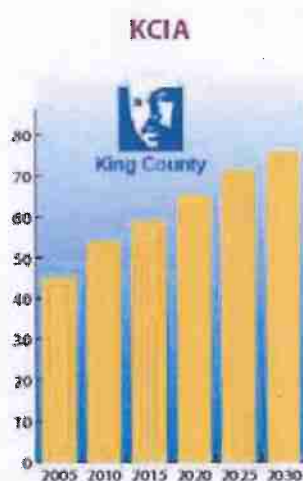
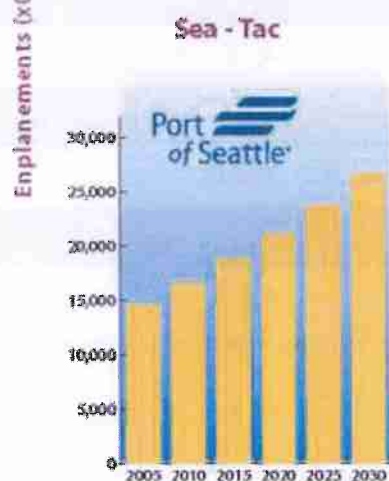
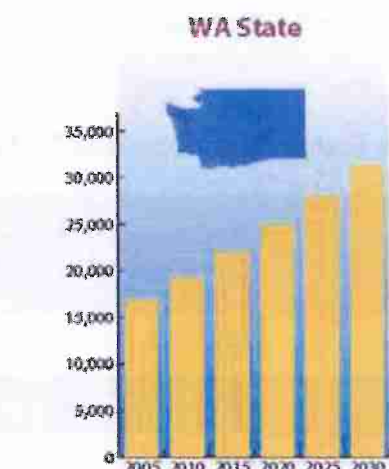
Year	State Total (x000)	Sea-Tac Total (x000)	KCIA Total (x000)
2005	16,861	14,632.1	45.1
2010	19,255	16,526.1	53.6
2015	21,913	18,700.9	58.8
2020	24,913	24,913	65.0
2025	27,903	27,903	70.9
2030	31,271	26,611.2	76.3

Source: Washington State Aviation System Plan, July 1, 2009.

These annualized growth rates resulted in an 85.5 percent increase in state-wide passengers, an 82 percent increase in passengers at Sea-Tac by 2030, and a 69 percent increase in passengers at KCIA. In the six-year period (2006-2011) which followed the 2005 base year for the Aviation System Plan, Sea-Tac passenger boardings had increased to 16,397,488 (as reported by the Port of Seattle).

Passenger traffic processed through KCIA increased in each year following 2005 before declining in 2010 and 2011. However, it should be noted that the KCIA passenger figures in the WSASP represent "total" passengers in lieu of "enplaned" passengers—thus doubling the actual passengers processed through KCIA.

The projected passenger demand for KCIA was not projected to impact the existing terminal capacity, since the peak terminal capacity utilization was only 4 percent.



## KCIA Passenger Demand and Airline Market Share

While Sea-Tac handled 99 percent of the Seattle area's passenger demand, KCIA had a significant increase in passenger traffic over the past decade. The historical passenger enplanements and airline departures for KCIA over the past decade are summarized in Table C-2.

**Table C-2: Historical Passenger Enplanements and Airline Flights Years 2002-2011 (KCIA)**

	CY	Enplanements	Airline Flights
2002		10,069	814
2003	16,220		2,141
2004	28,458		4,062
2005	23,016		2,964
2006	31,418		4,818
2007	34,580		4,317
2008	34,597		4,735
2009	35,863		5,888
2010	33,656		5,082
2011	34,434		4,191

Sources: Air Carrier Activity Information System (enplanements) and Research and Innovative Technology Administration, Bureau of Transportation Statistics (flights).



The passenger enplanement data is extracted from the Air Carrier Activity Information System (ACAIS), a database that contains passenger boarding and all-cargo data. This information reflects the total scheduled airline boardings and non-scheduled charter boardings that reported data through the ACAIS. The database supports the FAA's Airport Improvement Program (AIP) apportionment formula calculations. Current calendar year data is used to set AIP entitlements for the following fiscal year. The airline flights have been extracted from airport fact sheets published by the Bureau of Transportation Statistics.

Prior to SeaPort Airlines entering the market on June 30, 2008, Kenmore Air Express handled nearly 100 percent of the scheduled KCIA passenger traffic. During 2009 and 2010, Kenmore Air Express averaged a 70 percent market share, with SeaPort Airlines averaging a 30 percent share. SeaPort Airlines left the KCIA market on January 27, 2012.

Kenmore Air Express offers direct services from KCIA on 9-seat Cessna 208B Grand Caravan aircraft to Port Angeles and the San Juan Islands—Friday Harbor and Eastsound. While the frequency of service varies with the season, the summer schedule generally provides a minimum of six daily flights. The airline has recently moved its maintenance facilities to KCIA.

SeaPort Airlines used 9-seat Pilatus PC-12 aircraft in the local market until terminating service in January 2012.

The Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics provides passenger, flight, revenue passenger miles (RTM), available seat miles (ASM), and load factor information for all U.S. and foreign carriers operating from KCIA. This information was researched for the 2002-2011 period and is summarized in Table C-3. The statistics are provided for scheduled carriers submitting T-100 segment data on both domestic and international flights. It should be noted that passenger and flight data reported on T-100 segment data do not include non-scheduled charters, which report through the ACAIS, resulting in slightly lower reported passenger figures.

**Table C-3: Historical Passenger, Flight, RPM, ASM, and Load Factors  
Years 2002-2011 (KCIA)**

CY	Passengers	Flights	RPMs <sup>1</sup>	ASMs <sup>2</sup>	Load Factor <sup>3</sup>
2002	2,003	814	1,788,000	2,255,000	79.31%
2003	11,121	2,141	1,231,000	3,242,000	37.97%
2004	19,321	4,062	1,957,000	4,261,000	45.92%
2005	15,277	2,964	1,633,000	3,250,000	50.24%
2006	26,271	4,818	1,922,000	1,922,000	1,922,000
2007	26,380	4,317	1,897,000	2,981,000	63.65%
2008	26,638	4,735	2,161,000	3,681,000	3,681,000
2009	28,181	5,888	2,598,000	5,119,000	50.74%
2010	26,238	5,082	2,420,000	4,212,000	57.45%
2011	21,150	4,191	1,995,000	3,534,000	56.31%

Source: RITA, Bureau of Transportation Statistics, T-100 Segment Data.

<sup>1</sup> RPM: Revenue Passenger Miles; <sup>2</sup> ASM: Available Seat Miles. <sup>3</sup> Load Factor = RPM/ASM.

While the international passenger segment represented 2.5 percent of the total passenger segment in the 2006-2008 years, there have been limited (less than 0.1%) reported international boardings over the past three years.

## Terminal Area Forecast (TAF)

The Terminal Area Forecast (TAF) contains historical and forecast data for enplanements, airport operations, terminal radar approach control (tracon) operations, and based aircraft. The data cover the 264 FAA towered airports, 248 Federal contract tower airports, 31 terminal radar approach control facilities, and 2,824 non-FAA airports. Data in the TAF are presented in a federal fiscal year (October through September). The TAF is prepared each year to assist the FAA in meeting its planning, budgeting, and staffing requirements. In addition, state aviation authorities and other aviation planners use the TAF for planning airport improvements.



**Table C-4: Passenger Enplanement and Air Carrier Operations Forecast – KCIA TAF**

FY	Enplanements	Air Carrier Operations
2011 (base year)	33,023	11,843
2015	26,733	9,756
2020	31,164	10,904
2025	36,340	12,188
2030	42,398	13,621
2035	49,472	15,223
2040	57,754	17,012

Source: APO Terminal Area Forecast Detail Report, Issued by the FAA January 2013.

Passenger enplanements presented in the TAF show historical information from 1976 through 2011 and forecasts through 2040. The TAF assumes a demand driven forecast for aviation services based upon local and national economic conditions as well as conditions within the aviation industry. The forecasts for KCIA which were issued in January 2013 are summarized in

Table C-4 above.

While the FAA adjusts these forecasts each year, the existing terminal capacity will adequately serve this demand, consistent with the peak hour terminal demands created by 9-passenger aircraft.

## Airport Security Implications

The focus of airport security is to identify and reduce existing or potential risks, threats, targets and vulnerabilities to the facility. Appropriate protective measures vary dependent on the level of threat and the class of operator and airport. KCIA operates as a Category II airport pursuant to 14 CFR Part 139, with an Airport Rescue and Firefighting (ARFF) classification of Index A. The Category II classification means the airport is certificated to serve scheduled operations of small air carrier aircraft (10 to 30 passenger seats) and unscheduled passenger operations of large air carrier aircraft. A Class II airport cannot serve scheduled large air carrier aircraft. Since the current scheduled passenger service is provided with 9-seat aircraft, passenger screening is not required.

Airports certified under 14 CFR Part 139 must provide the following:

- Safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles.
- Reasonable protection of persons and property from aircraft jet blast.
- Fencing that meets the requirements of applicable FAA and TSA security regulations in areas subject to these regulations.

The Aviation and Transportation Security Act of 2001 (ATSA), Public Law 107-71 established the TSA. The act authorizes increased federal responsibility for all aspects of aviation security, including a federal take-over of passenger and baggage screening. The responsibilities of TSA were defined further in 2002 with the passage of the Homeland Security Act, Public Law 107-296, which created the Department of Homeland Security (DHS). The primary missions of the department include preventing terrorist attacks within the United States, reducing the vulnerability of the United States to terrorism at home, and minimizing the damage and assisting in the recovery from any attacks that may occur. DHS's primary responsibilities correspond to five major functions established by the bill: information analysis and infrastructure protection; chemical, biological, radiological, nuclear, and related countermeasures; border and transportation security; emergency preparedness and response; and coordination with other parts of the federal government, with state and local governments, and with the private sector.

Following creation of the DHS and TSA, there has been a focus on protecting the national transportation system infrastructure as a whole. The federal government has required various agencies to jointly develop national strategies and plans to ensure an integrated approach to transportation security.

The TSA requires airport operators to implement a security program approved by the TSA. The security program includes requirements such as establishing secured areas, air operations areas, security identification display areas, and access control systems. The TSA issues and administers these requirements under the Transportation Security Regulations. The TSA has provided airport security guidance in Recommended Security Guidelines for Airport Planning and Construction. KCIA fully complies with the guidelines outlined in this document, and continues to monitor changes in TSA requirements on a regular basis.

## Projected Passenger Market for KCIA

In 2005, in response to rising operating costs at Sea-Tac, Southwest Airlines submitted a proposal to King County to build a \$130 million terminal on KCIA and relocate operations from Sea-Tac. Alaska Air Group's Horizon Air also demanded equal access and proposed additional flights to KCIA. King County determined

that it was not in its interest to pursue these two opportunities. While the proposals were rejected in part due to high anticipated costs for roadway improvements and noise mitigation, the addition of a major commercial airline (or two) would potentially create operating delays for The Boeing Company, air cargo companies, and fixed base operators who depend upon utilizing the 10,000-foot primary runway on the airfield.

While modest growth in passenger demand and operations can be expected at KCIA, as reflected in FAA's TAF and the State of Washington's Aviation System Plan, the passenger market is not expected to exceed the capacity of the existing terminal complex and will remain in the 9-seat commuter aircraft category. Based upon current TSA requirements, passenger screening is not required for scheduled operations with 9-seat aircraft.

While KCIA only has one scheduled passenger carrier at this time, the load factors experienced over a 42-month period while two carriers provided services would indicate that the local market can support two carriers if the service is supported by reasonable fares and adequate frequency to desired markets. KCIA's proximity to downtown Seattle and simplified boarding process offer advantages for many air travelers. Scheduled passenger service is expected to continue to provide a strong component of the local market, and support KCIA's status as a primary commercial service airport in FAA's national airport system.



## **APPENDIX D: REVIEW OF AIRPORT PROPERTIES & DEVELOPMENT OPPORTUNITIES**

Decisions on development or redevelopment of airport properties must take into consideration the overall mission, goals, and objectives as outlined in preceding chapters. In addition, the actions must take into consideration FAA rules and regulations which may impact type of use, height of development, and compatibility with adjacent land uses. Most important, the development or redevelopment activities must improve the long-term financial self-sufficiency of KCIA and support the economic vitality of the Puget Sound region.

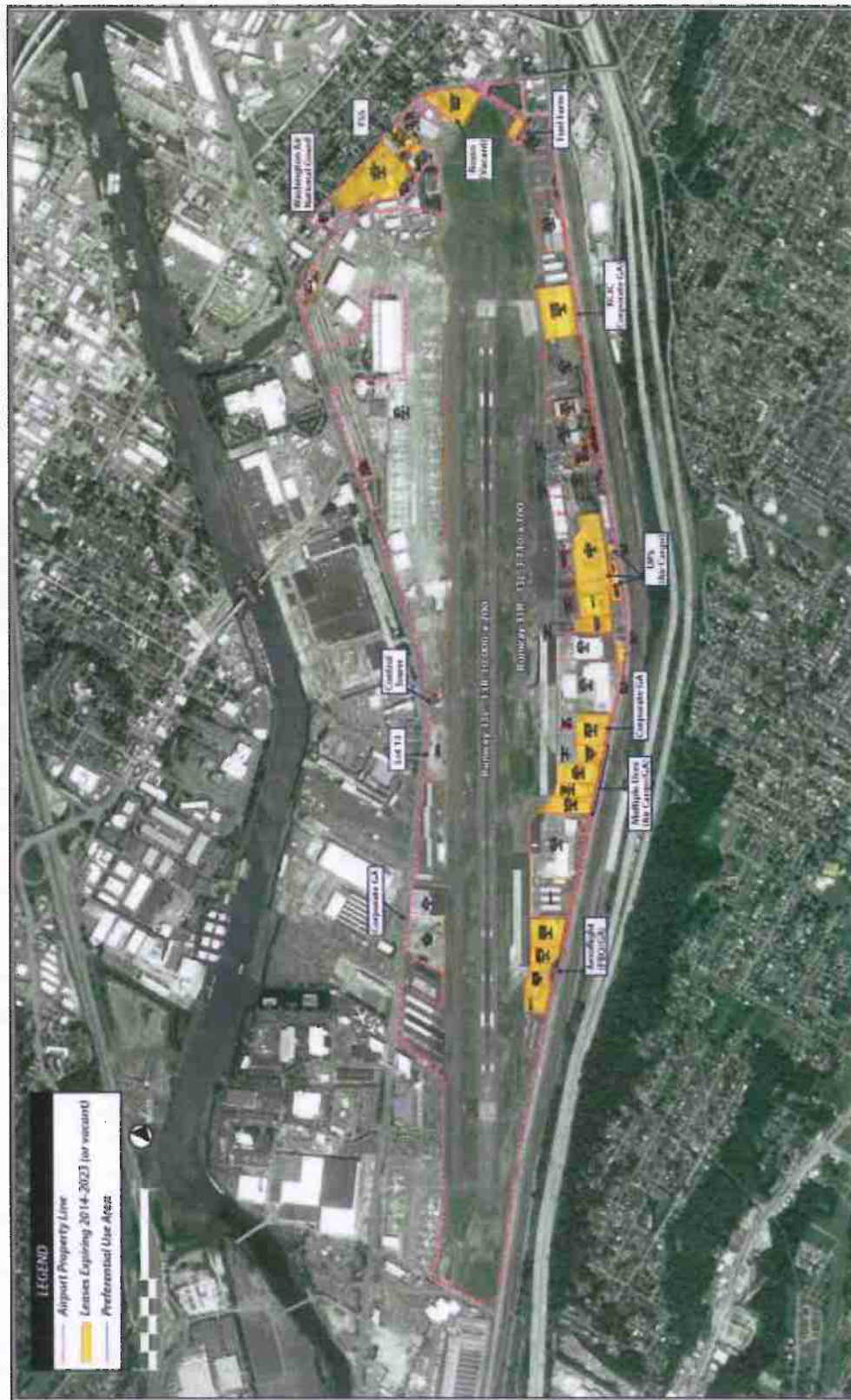
Continued development or redevelopment of the Airport's land to provide maximum economic benefit to the region is a long-term effort. The process involves responding to the demands of tenants and users, as well as balancing those potentially conflicting demands with governmental procedures for use and leasing of the Airport. This redevelopment process is complicated by the high demand for on-Airport facilities and the wide variety of existing users and tenants.

The current property is fully developed with facilities for aircraft flight test/delivery, fixed base operations, aircraft storage, aircraft maintenance, air cargo sortation, itinerant aircraft parking, passenger terminal and auto parking, airport maintenance support facilities, and several non-aviation parcels not having access to the airfield. All properties along the east side of the airfield have roadway access onto Airport Way via Perimeter Road. All properties along the west side of the airfield have roadway access directly onto East Marginal Way. Several properties at the north end of the airfield have roadway access onto South Albion Place and Hardy Street.

When reviewing potential development sites, consideration must be given to the term of existing leases (or lease options). Several parcels where leases have already expired are on month-to-month rental agreements (MRA). For analysis in the Strategic Business Plan, consideration was given only to parcels with leases expiring within the next ten years. Exhibit D-1 depicts leases which have expired, are on MRA, or expire not later than 2023.



Exhibit D-1: Leases Expiring 2014-2023 (or Vacant)



Several parcels at the north end of the airfield have leases expiring within the strategic planning period: the FAA Flight Service Station (FSS) (2 parcels-lease number 7255) expires in 2019, while the Washington Air National Guard (WANG) lease (7137) expires in 2023. The FAA FSS lease is at fair market value (FMV) (since 2004), while the WANG lease is at \$1/year. The leases are not contiguous to the airfield but are adjacent to the Boeing leasehold. The WANG leasehold is no longer used for aeronautical activities. It is anticipated that future use will be non-aeronautical.

The former Rosso lease area (7041) falls under the 50:1 approach to Runway 13R; therefore, the maximum height and location of structures will be limited in this area. In addition, realignment of the airport service road to the maximum extent possible should be considered to relocate it outside of the runway protection zone. Since the parcel lies immediately adjacent to the existing airport maintenance facilities, and a portion of existing parking areas adjacent to the former 13th Street corridor may become unusable if the service road is relocated, the parcel may need to be reserved for relocation of airfield maintenance facilities.

Based upon current land use guidelines published by the FAA, and the fact that the site falls within the runway protection zone (RPZ), a future fuel storage facility will need to be assigned to a location outside of the RPZ. The current lease is at FMV.



The lease for the King County Jet Center (KCJC-7164) expires in 2020. Currently used for corporate general aviation, and located adjacent to similar uses, it is anticipated to remain in this aeronautical use. The current lease is at FMV.

The UPS lease (7282) is on a MRA. The adjacent lease with Ameriflight (7121) expired in 2013, while several adjacent leases along Perimeter Road (7202, 7178, 7201, and 7062) have already expired. Combined, this area represents an 18-acre development parcel which can be used for long-term air cargo and/or combination air cargo/general aviation uses. The current lease is at FMV. Several buildings on expired leaseholds have already been removed, and further clearing of older facilities were undertaken in 2013.





Proposals from both air cargo and fixed base operators have already been received on this site. It is expected that a combination of air cargo and general aviation facilities will be developed on the site and ensure long-term aeronautical uses on the parcel. Preliminary plans submitted by UPS have assumed the closure of Perimeter Road between Portland Street and the passenger terminal entrance. The Airport Master Plan designated the entire area for air cargo uses, and subsequent planning efforts have confirmed this land use designation. No other parcel on the east side of the airfield offers comparable parcel depth and distance from the main runway, allowing parking positions by wide-body aircraft with high tail heights. In addition, the ability of delivery trucks to enter and exit the airport property at Portland Street is an advantage for air cargo companies.

Several contiguous lease parcels beginning with the Nordstrom lease (7133) and extending south will expire within the next ten years (or have already expired and are on a MRA). While the Nordstrom lease is used for corporate general aviation use, the remaining leases (7092, 7072, 7035, and 7050) are used primarily for air cargo, with the exception of the Bicknell leasehold (7035) which is used for aircraft maintenance. A portion of the area (in front of Nordstrom) is common use ramp. With the recent closure of the DB Schenker Logistics/BAX Global air hub in Toledo, their leasehold (7050) is primarily supporting a truck-based operation. ABX/DHL operates from the Pajaro leasehold (7072). Current leases



are at FMV. The Airport Master Plan has designated this area for air cargo, corporate general aviation, or a combination of these uses. The area does not work efficiently for air cargo, and cargo trucks are frequently backed up on Perimeter Road.

The sizable parcel available for air cargo south of the passenger terminal, and recent consolidations in the air cargo industry, may allow for the redevelopment of this area for corporate general aviation and/or aircraft maintenance. The common use public ramp or preferential use area could be re-examined during lease negotiations.

The remaining contiguous parcels with leases expiring within the next ten years are at the far south end of the airfield on the east side. Most of this area is leased to Aeroflight (7045 and 7081), with additional area provided by the former King County Sheriff leasehold and aircraft tie-down ramp. While these parcels individually may have limited value for redevelopment, combined they are marketable. Current leases are at FMV. The Airport Master Plan has designated this area for small general aviation use.

With the exception of the FAA control tower, there are no other leases expiring within the next ten years on the west side of the airfield, although redevelopment of the southwest T-hangars is possible since the debt service on these hangars is fully retired. The Airport Master Plan has recommended the Wood-Meadows property (3.7 acres) adjacent to the southwest T-hangars for purchase and to be used for small general aviation.

The FAA undertook a control tower relocation study in 2012 and determined that the most likely location for a new control tower is immediately south of the present tower. This will require the use of a portion of Lot 13 to support the control tower construction and minimize the remaining marketable portion of Lot 13 which is limited by height zoning adjacent to the runway. In fact, the limited depth of this parcel may restrict its use to tie-down apron and/or auto parking. The exact dimensions of the potential FAA lease requirement are unknown at this time. All of the airport property south of the control tower and north of the museum was designated in the Airport Master Plan for small general aviation uses. Current leases with Charles Air and GDH-I are considered as corporate general aviation uses.



All of the potential development sites are limited by the 7:1 transitional surfaces extending from the edge of the main runway's primary surface (whose elevation changes with the centerline elevation of the runway) and major roadways. Perimeter Road South (on-airport) offers the potential for added depth



between Portland Street and the terminal entrance, and preliminary plans submitted by UPS have taken advantage of this area in the ultimate air cargo arrangement. However, this will limit access into the remaining leasable parcel, requiring all surface traffic to use the main terminal entrance and exit points. A reconfiguration of the intersection will be possible once the 7300 building is removed following temporary use for offices by UPS.

The Airport is land constrained with the majority of developable land held through long-term land leases. Therefore, additional properties that are not currently owned by King County were examined for potential acquisition and/or through-the-fence (TTF) access opportunities. Several of these parcels, depicted on Exhibit D-2, have been identified in the Airport Master Plan (or on the latest Airport Layout Plan) for long-term acquisition consideration. Availability of funding is a key consideration. However, properties identified on an FAA-approved ALP may qualify for grant funding through the Airport Improvement Program (AIP).

The Airport Business Center (Wood-Meadows) property, located immediately north of the Southwest Airpark Hangars at 9100 E. Marginal Way South, is a 3.68-acre parcel which has the potential for airfield access. Falling under the transitional surface of

Runway 13R-31L which will limit the height of facilities which can be built on the site, it has been identified on multiple Airport Master Plans (and ALPs) for acquisition.

The Elizabeth Street (Troll Motors/Show Quality) property, located at 1115 S. Elizabeth Street, is a 0.24-acre parcel which is sandwiched between the Airport Maintenance shops and former Rosso nursery site, and falls under the 50:1 approach surface to Runway 13R. It has the potential for airfield access.

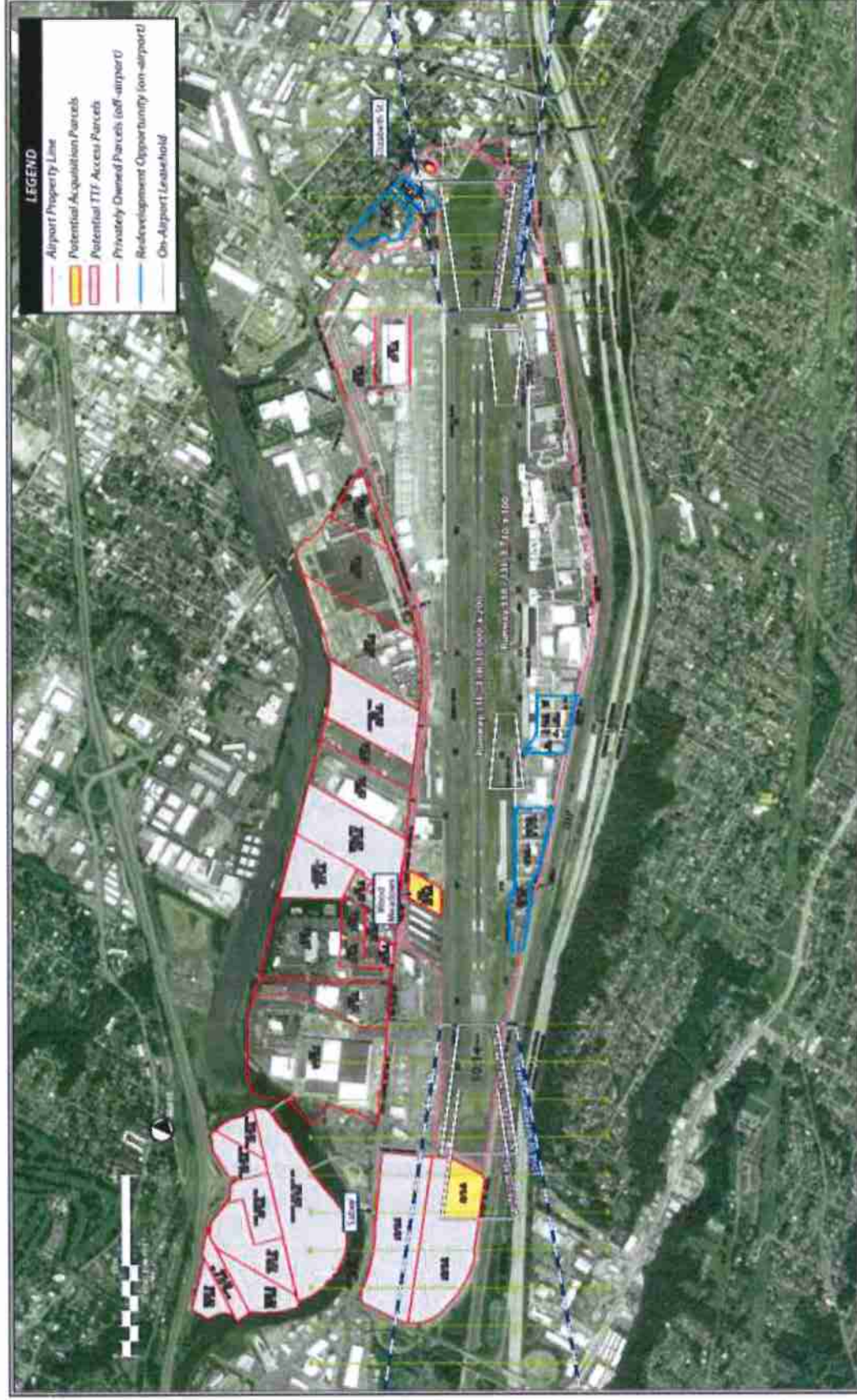
The Sabey Company currently owns the 63.69-acre (former Associated Grocers) property south of the Airport and bounded by Airport Way S., S. Norfolk St., and E. Marginal Way S. This property has the potential for direct airfield access (assuming the closure of S. Norfolk St.) . A portion of this property (7.84 acres) falls within the departure runway protection zone (RPZ) of Runway 13R and qualifies for funding through the AIP. Another 24.83 acres of the property lies under the F.A.R. Part 77 approach to Runway 31L. The elevation of the approach surface is noted in even 10-foot increments on Exhibit D-2.

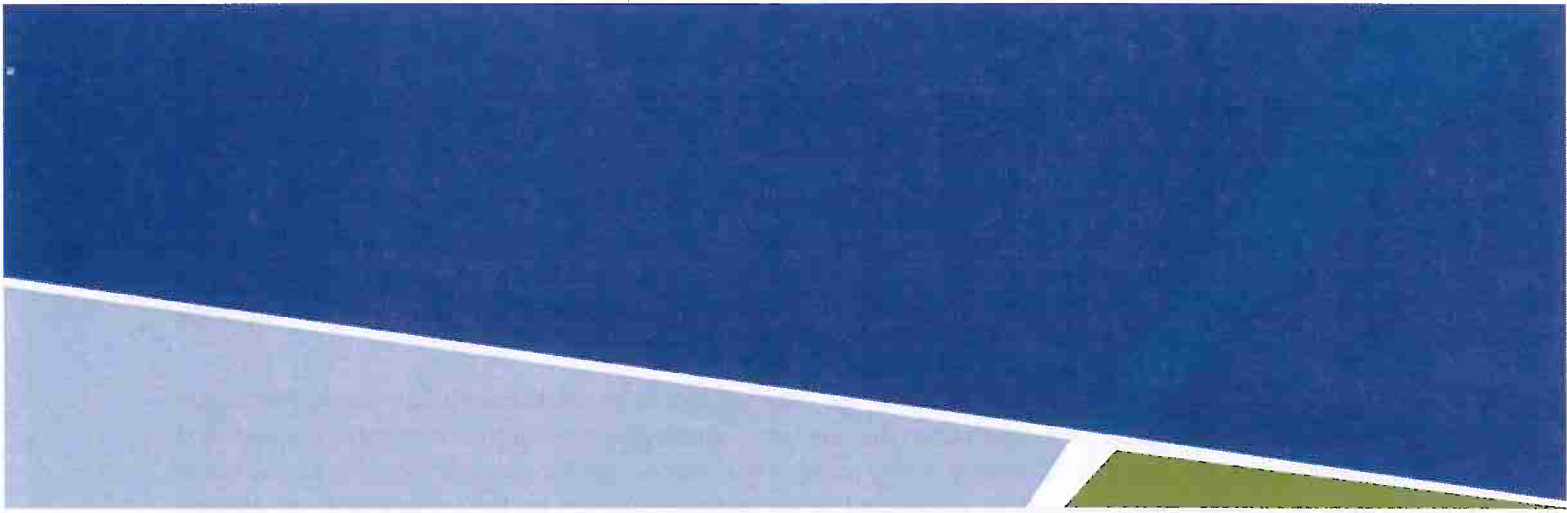
Several properties on the west side of E. Marginal Way S. have the potential for TTF access. These parcels (noted with gray shading on Exhibit D-2) may provide the opportunity to connect the airfield to other properties with the need for direct airfield access.

The FAA provides guidance to airport sponsors in agreements granting TTF access. King County, as the airport sponsor, is entitled to seek recovery of capital and operating costs of providing a public use airfield. The development of aeronautical enterprises on land off-airport and not controlled by the airport sponsor can result in an economic competitive advantage for the TTF operator to the detriment of on-airport tenants. Therefore, to equalize this imbalance, the airport sponsor should obtain from any off-base entity a fair return for its use of the airfield. It may assess any level of fee it deems appropriate for TTF access so long as that fee is not less than the comparable fee paid by on-airport tenants.

During the next update to the Airport's Master Plan and subsequent update to the Airport Layout Plan, King County should further evaluate the highest and best use for each of the parcels identified in the preceding paragraphs.

Exhibit D-2: Potential Acquisitions/Through-the-Fence (TFF) Parcels





## **APPENDIX E: AIRPORT GOVERNANCE**

In an effort to consider a broad range of strategic issues, five models of airport governance were reviewed to identify whether different approaches to governance might that might present opportunities to maximize either the financial performance or the economic impacts that KCIA. The models are the authority model, Seattle-Tacoma International Airport (Port Districts), independent authority, privatization, private management and district model.

### **Authority Model**

There are numerous airports within the U.S. that use this governing model. Several examples are:

- Dallas Fort Worth International Airport;
- Jackson County Airport Authority (Medford, Oregon);
- San Diego International Airport Authority; and
- Pittsburgh International Airport Authority.

Typically, an airport authority is created to replace a municipal governing entity. The purpose is to focus on airport issues that may not occur as a priority or as a business operation considering the municipal government has many other issues that require the elected and municipal manager's attention. The authority model permits development of policies which separates it from the local governing entity whose policies may not work in an airport environment. Such policy areas can typically include hiring and separate salary structures, job functions and recruitment to be better able to compete in the aviation marketplace.

### **Port Districts**

There are numerous examples of airports operated by Ports within the U.S., but especially in the State of Washington.

Examples include:

- Seattle-Tacoma International Airport (Port of Seattle);
- Grant County International Airport (Port of Moses Lake);
- Tri-Cities Airport (Port of Pasco);
- Bellingham International Airport (Port of Bellingham); and



- Walla Walla Regional Airport (Port of Walla Walla).

As in the Authority Model, port districts are focused on transportation and the movement of people, goods, and services. They are traditionally self-funded. They compete in different environment dealing on a business to business relationship regarding the airport rather than the broader delivery of numerous services to its citizens required of a municipal government, providing for a narrower focus for operating the airport.

In this model, KCIA would be folded under the Seattle-Tacoma International Airport management and operation. There would be a reduction in the number of employees providing for a savings in salaries and other legacy costs. In this example, it is also possible that leading the support and focus for aerospace at KCIA by County leaders would be diminished when operations would be the responsibility of another organization with other diverse requirements.

## Privatization

Privatization of airports in the U.S. has not been as popular as in other countries. This is because federal funding for capital works is only available to publicly operated airports. In 1997, Congress enacted the Federal Aviation Administration's (FAA) Airport Privatization Pilot Program. This program provided for up to five airports to apply to the FAA to participate. The benefit is that the new operator would not have to repay federal grant money that had been accepted by the public entity since the commencement of the federal grant program.

Another benefit is that the private operator would invest their own capital over the lease period. As part of the Reauthorization Act of 2012, Congress permitted up to ten airports to participate in the program. To date, there has been limited interest in the program. Table E-1, Airport Privatization Applications, provides the status of the only airports that have applied for this program.

As is seen in Table 8A, the program has not met the interests of any airport owner or governing authorities as no airports in the U.S. currently use this model. This example would unlikely attract interest at KCIA, as the program, as adopted, has not gained traction in the U.S.



**Table E-1: Airport Privatization Applications**

Airport	Location	Application Status
Brown Field Municipal Airport	San Diego, CA	Application withdrawn 2001
Chicago Midway International Airport	Chicago, IL	Revised preliminary application approved January 18, 2013. The City under a new administration has suspended the process and withdrawn their application.
Gwinnett County Briscoe Field	Lawrenceville, GA	Application withdrawn June 11, 2012
Hendry County Airglades Airport	Clewiston, FL	Application withdrawn October 21, 2010
Luis Muñoz Marín International Airport	San Juan, PR	Preliminary application approved December 22, 2009. Airport Sponsor published a Request for Qualifications in July 2011. Sponsor selected Aerostar Airport Holdings on July 19, 2012, to become the private operator. The FAA held a public meeting on September 28, 2012, to hear comments on the final preliminary application. The FAA approved the final application to privatize Luis Muñoz Marín International Airport in San Juan, Puerto Rico, on February 25, 2013.
New Orleans Lakefront Airport	New Orleans, LA	Application terminated 2008
Niagara Falls International Airport	Niagara Falls, NY	Application withdrawn 2001
Rafael Hernández Airport	Aguidilla, PR	Application withdrawn 2001
Stewart International Airport	Newburgh, NY	The first commercial service airport to participate in the FAA's privatization program from March 2000 to October 2007. The Port Authority of New York and New Jersey now operates the airport.

\*Source: FAA Website

## Private Management

Private management often gets confused with privatization. In the Private Management Model, the airport owner contracts with a private firm to manage the airport on behalf of the owner and pays the firm a fee for these services. In many cases, the airport owner recognizes that they may not have a strong management team in place and determine that a private airport management firm would be incentivised to operate the airport rather than the governmental unit. In some examples, a firm may be

hired to operate some of the airport facilities but not the entire airport or may provide staff to governmental managers.

Examples of private management include:

- Bob Hope Airport;
- Westchester Airport;
- Albany International Airport;
- Hartsfield-Jackson International Terminal E; and
- Rhode Island Airport Corporation.

These airports have been privately managed for over twenty-five years.

In this example, King County would pay a private operator to manage the airport or provide staff to operate the airport.

## District Model

This model has been established by several communities in California to develop and support their local airports. Examples include:

- Santa Maria Public Airport District;
- Monterey Regional Airport District;
- Truckee Tahoe Airport District;
- Minter Field Airport District; and
- Indian Wells Airport District.

These districts have taxing authority to help support airport operating costs. A district has established boundaries wherein the Board of Directors can set tax rates to assist in supplementing a rates and charges shortfall. Each member of the Board of Directors is elected from the electorate within the established boundary set by the creating authority.

RCW 14.08.290 permits the County Council to establish an independent airport district. Upon petition of 100 registered King County voters, the Council may place on the ballot a proposition to establish a district which may be county-wide in scope and include all cities and towns. The district is empowered to levy not more than seventy-five cents per thousand dollars of assessed value for property within the district. The ballot initiative shall include the authorization for the district and the amount of the levy. The initial governing board shall be the County Council. The Council shall appoint three district commissioners who will stand for election at the next general election. The positions are non-partisan and do not receive compensation for service.

## FINDINGS AND CONCLUSIONS

### Authority Model

King County has a focused approach to the Airport and its activities from the County Executive's Office, County Council and the Department of Transportation. There is not currently any activity that would suggest the County should investigate a change to this operating model based on our observations over the past 24 months.

### Port Model

King County officials reviewed transferring the airport to Sea-Tac previously and determined that it was not in the County's best interest to make this change.

### Privatization Model

KCIA would unlikely attract an investor and/or operator to take over the operation and ownership of the airport under this program due to physical limitations of available land for new development and the current long term leases with their terms and conditions. These two items would make it very difficult for the new owner to expand the airport footprint to attract new tenants and thirty-year leases, making it difficult to turn a profit after the investor pays King County for the Airport. It is also possible that The Boeing Company and other tenants would be concerned about a new operator's ability to maintain the airfield and the potential of the operator of imposing new fees to pay debt service, operations and their return on investment.

### Private Management

The consulting team does not see an advantage for King County to pursue this option. The County has a strong management team in place. Typically this option is chosen when the operating authority loses faith in management. This option would add to expenses by fees paid to the management firm without any perceived benefits.

### District Model

This model provides the County with the ability to raise additional revenues not typically afforded by several of the other governing examples provided. It also potentially provides an ability to support the aerospace industry in the Central Puget Sound region through coordinated policies and fees.

